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The Raven Bluff Site: Preliminary Findings from a Late Pleistocene Site in the Alaskan Arctic

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Introduction

The Raven Bluff (49/DEL-00402) site was discovered in July 2007 by U.S. Bureau of Land Management archaeologists conducting reconnaissance surveys in the Kivalina River drainage in extreme northwest Alaska. The site contains a near-continuous scatter of lithic debitage and stone artifacts across its partially unvegetated surface. These surface artifacts, and those found in the site's relatively thick, stratified soils, reflect the human use of this bluff dating back to the Late Pleistocene — nearly 13,000 years (10 720±70 radiocarbon years before present [^{14}C yrs BP]). In addition to stone artifacts, Raven Bluff contains an unusually well-preserved faunal assemblage — one that represents the first direct evidence for Late Pleistocene faunal exploitation in the American Arctic. Further, this site offers what is perhaps the first solidly dated example of a northern fluted point in North America.

Location and Setting

Accessed by helicopter, the site is situated atop an eroded, 25-m-high limestone bluff approximately 160 km (100 miles) north of Kotzebue and 48 km (30 miles) east of the Chukchi Sea coast (Figure 1). The 60-m × 260-m landform lies at the boundary of the De Long Mountains and a tundra plain studded with isolated peaks and plateaus extending east to the Chukchi Sea (Figure 2). The surface of the site is sparsely vegetated with grasses, berries, mosses, and lichens. Dense riparian vegetation at the base of the bluff bounds the site to the east, while moist tussock tundra adjoins the remaining sides.

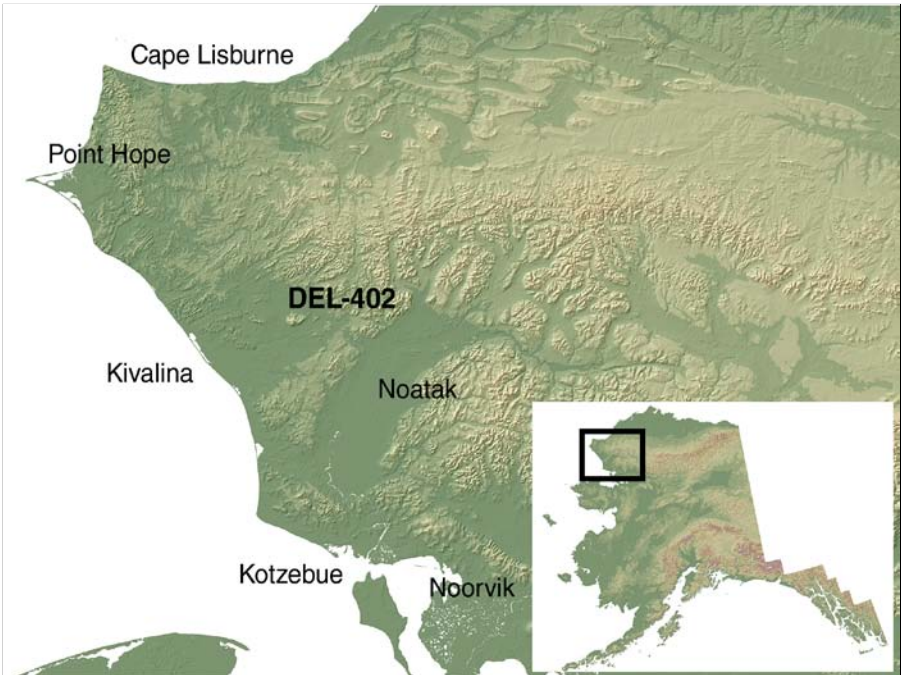

Figure 1. Location of Raven Bluff Site (DEL-402), northeast of Kivalina, Alaska.

Site Identification

The site was discovered as part of the BLM's Kivalina River Archaeological Survey, which I initiated in 2007. That year we recorded a substantial surface lithic scatter at Raven Bluff. Surface artifacts, observed in varying densities across the entire landform surface, indicated Late Prehistoric Eskimo, Denbigh, and Northern Archaic presence. We excavated two 50-cm shovel tests during the initial investigation; both were positive for cultural material. The first test identified a likely hearth feature with abundant lithic debitage and charcoal at a depth of 35 cm below surface (cmbs). This charcoal sample returned a date of 1900±30 ^{14}C yrs BP. The second test, though undateable, contained a light density of lithic debitage throughout, and a microblade core nearly 70 cm below the surface. These tests demonstrated that the site contained not only a significant accumulation of soil, but also buried cultural deposits and the potential to date those deposits.

2008 Testing

A six-person BLM crew returned in 2008 for ten days. We established a preliminary grid and undertook a program of auger testing and 1-m^2 unit testing with the overall goal of characterizing soil depth and presence/absence of cultural material

BLM
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Figure 2. Aerial view of Raven Bluff and the Kivalina River facing south.

across the site. The abundance of limestone pebbles and cobbles at the site quickly proved problematic for auger testing in the test units. We therefore discontinued augering and focused on excavating six test units. All tests, excavated in arbitrary 10-cm levels and screened through ¼-inch hardware cloth, were positive for subsurface cultural material. Cool weather during the summer of 2008 forced us to terminate all but Test Unit 1 (TU1) at depths between 30 and 40 cmbs after encountering solidly frozen soils. We tarped these frozen units and and loosely backfilled them for completion in 2009.

Test Unit 1, Top of the Bluff

TU1 was located near the central high point of the site with a commanding view of the river below and

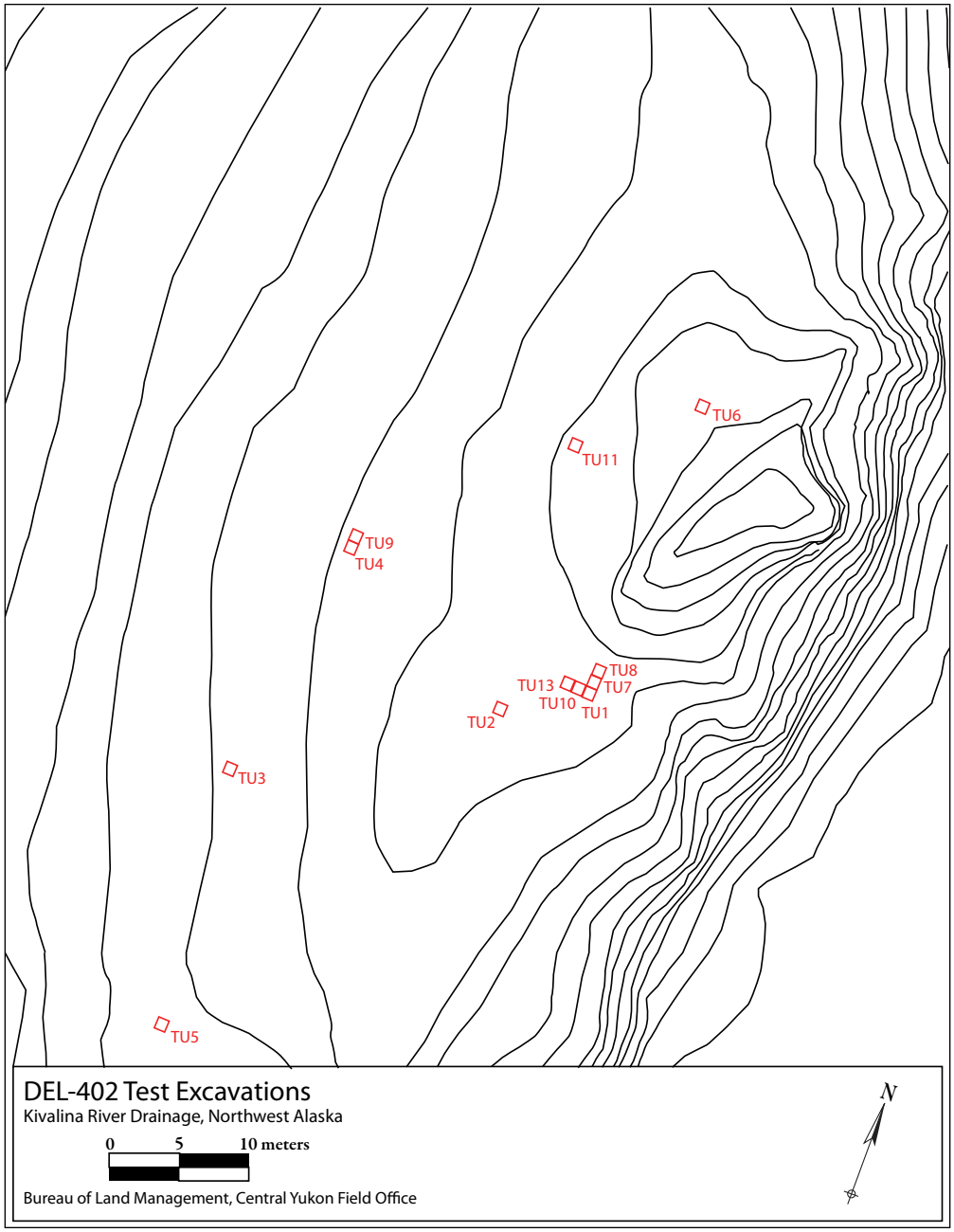

Figure 3. Map of test excavations at Raven Bluff in 2008 and 2009.

tundra beyond. We excavated TU1 to a depth of 95 cmbs and found that it contained abundant lithic material as well as some unusually well-preserved faunal material. The lithic assemblage from TU1 was dominated by local banded gray chert debitage, with many primary flakes and larger debitage exhibiting stream-rolled cortex. The lithic assemblage from this unit appears to have largely resulted from percussive bifacial reduction activities with negligible evidence for blade technology. Diagnostic artifacts were limited to evidence of Eskimo Continuum/Arctic Small Tool tradition (ASTt) technology in the form of two parallel-flaked biface fragments found between 20 and 25 cmbs in TU1.

The faunal assemblage from TU1 was composed primarily of fractured large mammal bone. The bone was remarkable for its well-preserved, darkly patinated appearance and preserved collagen. A 2009 analysis of bone recovered from the site indicates that most, if not all, of the large mammal bone was deposited as a result of human behavior. An intact piece of charcoal from a probable hearth at 21 cmbs, and two fragments of large mammal bone (from 40 to 45 cmbs and 70 to 80 cmbs, respectively) returned dates of 2150±40 ^{14}C yrs BP, 9800±60 ^{14}C yrs BP, and 10210±60 ^{14}C yrs BP. This evidence supported the notion that DEL-402 is a multi-component site with a potentially thick Late Pleistocene/Early Holocene cultural deposit, little evidence of dramatic cryoturbation, and a moderately large, well-preserved faunal assemblage.

2009 Testing

In 2009, a crew of six excavators spent 12 days testing the site. The goals of this work remained preliminary in nature. The primary objectives included the completion of units started the previous year, gaining a larger artifact assemblage, and expanding our work in the vicinity of TU1. We again excavated units in arbitrary 10-cm levels and screened material through ¼-inch hardware cloth. We found that the six 2008 tests had thawed, so we completed those test units and an additional seven units (Figure 3). Every unit contained cultural material. Units were relatively deep and contained lenses of pebbles and cobbles of fractured limestone of varying thicknesses, depths, and densities within a soil matrix trending from silty to clayey loam. Occasional firmly packed limestone deposits and significant densities of artifacts often made excavation at DEL-402 time-consuming and difficult (Figure 4).

We excavated all units but TU11 to between 100 and 160 cmbs. Cultural material typically terminated between 100 and 120 cmbs, immediately above a sterile, gray clay. Initial results suggest that the level portions of the site, such as the vicinity of TU1, differ in regard to soil depth and composition from those areas on the landform's gentle side-slope. Side-slope units tended to have a thicker, less dense cultural deposit, deeper sterile clay, and more mottled appearance.

Tests near the top of the bluff in the vicinity of TU1 again revealed a significant amount of burned and unburned bone and lithics. Many of the larger bone specimens were either identified as caribou or demonstrated thickness and curvature suggestive of caribou (Kuehn 2009).

The 2009 work provided numerous dateable bone samples. A single date was submitted from side-slope unit TU9, while eight samples were submitted from the top of the site near a significant density of bone, lithics, and the fluted point base.

This growing collection of radiocarbon dates supports a preliminary division of the deposit into an Upper and a Lower Deposit. Artifacts collected from the Upper Deposit, typically from 0 to 40 cmbs, included a Northern Archaic side-notched point fragment and further ASTt material. Notable Lower Deposit artifacts included several microblades, blade cores, bifacial cores, abundant bifacial flaking debris, and a single fluted projectile point base. The 2009 radiocarbon dating submission also established that there were no significant stratigraphic anomalies in the vicinity of the main TU1 excavation block. The apparently early date of 5715±40 ^{14}C yrs BP for a portion of caribou calcaneus from a depth of over 130 cmbs in TU9 suggested that the side-slope may be more subject to mixing, either mechanical or via cryoturbation, but the top of the site appears to be remarkably intact. We reached this understanding by submitting a vertically sequential and horizontally close series of five bone samples from TU10 and TU13 (Figure 5). The returned dates mirrored the 2008 sample results and ranged from 10130±70 to 10530±80 ^{14}C yrs BP, again indicating the presence of a Late Pleistocene cultural deposit >60 cm thick, with no significant mixing

Figure 4. Excavator Steven Kuehn preparing to profile Test Units 10 and 13 in 2009.

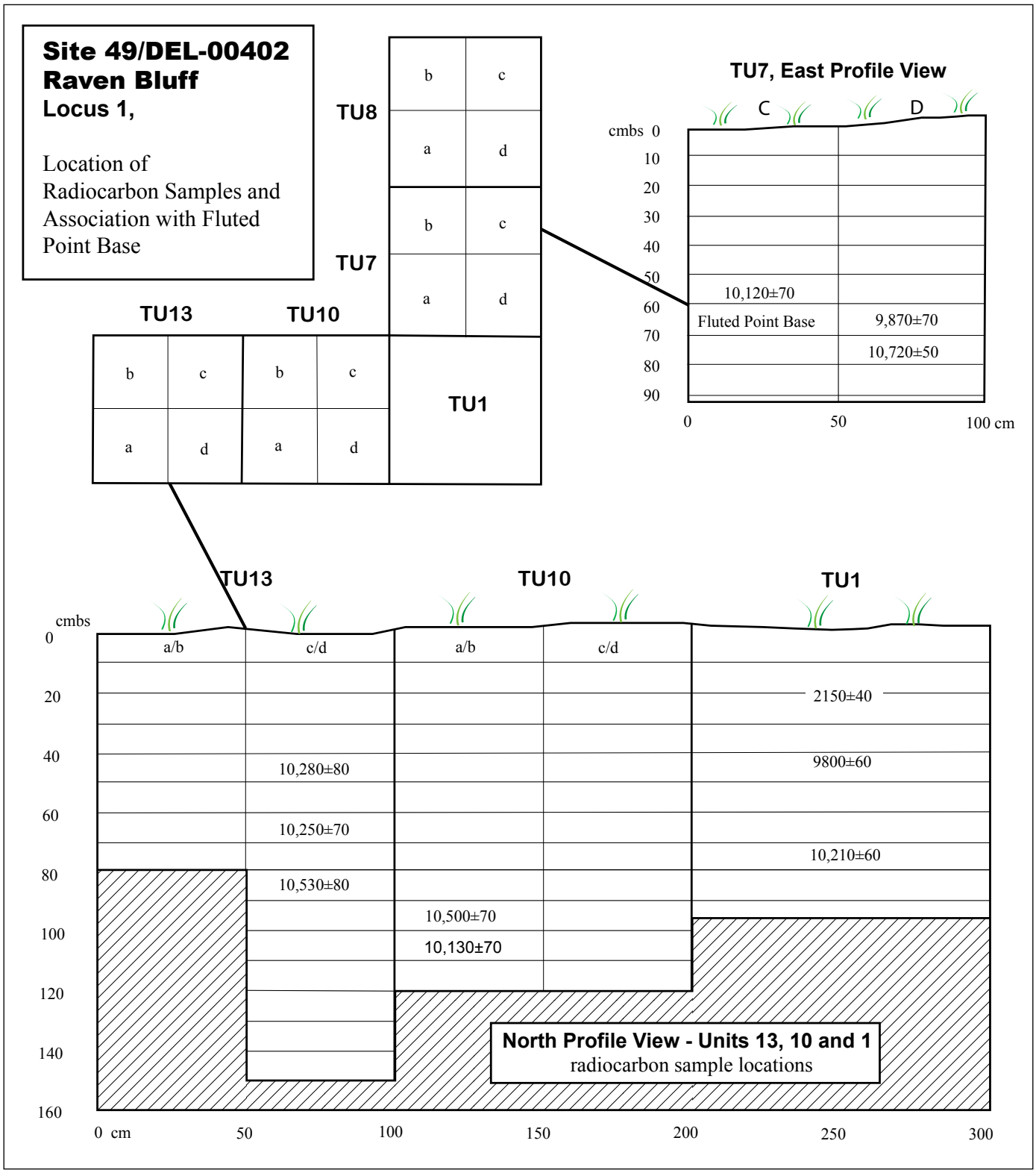

Figure 5. Location of radiocarbon samples and association with fluted point base at Raven Bluff.

Table 1. Radiocarbon dates for charcoal and bone collagen samples from the Raven Bluff site.

Lab ID	Year	14C Age BP	Test	cmbs	Sample ID	Sample Material
UGAMS-02338	2007	1900±30	ST 1	35	KR 2007-10-1	Wood charcoal
Beta-248990	2008	2150±40	1	21	DEL402-U1L1	Wood charcoal
UCI#-67487	2009	5715±40	9	130-135	Kivalina 1 (U9-39)	Bone collagen
Beta-248991	2008	9800±60	1	40-45	DEL402-U1L6	Bone collagen
Beta -266924	2009	9870±70	7	60-70	DEL402U7LD 2	Bone collagen
Beta-266923	2009	10,120±70	7	50-60	DEL402U7L6C 1	Bone collagen
Beta-248992	2008	10,210±60	1	70-80	DEL402U1L11	Bone collagen
UCI-67491	2009	10,500±70	10	90-100	Kivalina 5 (U10-35)	Bone collagen
UCI-67492	2009	10,130±70	10	100-110	Kivalina 6 (U10-39)	Bone collagen
UCI-67488	2009	10,280±80	13	40-50	Kivalina 2 (U13-23)	Bone collagen
UCI-67489	2009	10,250±70	13	60-70	Kivalina 3 (U13-29)	Bone collagen
UCI-67490	2009	10,530±80	13	80-90	Kivalina 4 (U13-34)	Bone collagen
Beta-266925	2009	10,720±50	7	70-80	DEL402U7L8D 3	Bone collagen

of soils in the vicinity of the dated samples (Table 1).

Fluted Point Base (Unit 7, NE ¼, L 7, 60-70 cmbs)

The base of a fluted projectile point was recovered from a depth of between 60 and 70 cmbs (L7) of TU7, immediately to the north of TU1 on a level bench just below the high point of the bluff. The soil matrix of TU7/L7/C is described as a brown to yellowish brown silty loam containing lenses of limestone gravel/cobbles (<10 cm).

The fluted point base measures 19 mm in width, 17 mm in height, and is nearly 4 mm thick. It is manufactured of fine, brown, semi-translucent chert with a slightly asymmetrical concave base and ground lateral margins (Figure 6). It has been basally thinned and exhibits one primary flute scar with retouch on one surface and two overlapping flute scars on the other.

In an effort to build on the work of several archaeologists before me, I propose that this point is of a particular northern fluted point type not yet clearly defined in the literature. Recognizing that any initial attempt at classification can be a messy business, my hope is that others will lend their data and insights to further refine the classification of northern fluted points.

While the two most notable specimens of this proposed type were recovered from the Putu site in the northern foothills of the central Brooks Range (Alexander 1974, Reanier 1995), it should be recognized that several similar points were already known from the De Long Mountains when the discoveries were made at Putu. The first fluted point discovery in Alaska is credited to geologist Edward Sable in the Utukok River drainage in 1947 (Thompson 1948). This was followed in 1950 with two finds by Lachenbruch and Hackman in the Kugururok drainage, approximately 8 km (5 miles) from the headwaters of the Utukok (Solecki 1951). In 1966 Robert Humphrey

Figure 6. Raven Bluff fluted point (top) compared to the 1966 find from the Utukok River. (bottom). Utukok point image modified and adjusted to match Humphrey's narrative scale ("longest side, 1.8 cm.") from Humphrey 1966.

discovered at least one fine example of this point type, again in the Utukok River drainage near the confluence of Driftwood Creek (Humphrey 1966). In describing the point, Humphrey states:

> The fluted point, discovered in 1966, is made of blue-gray chalcedony, and contains multiple flutes: one channel having been removed from one face, and two from the other. The concave base has been dulled by grinding on both sides and the bottom …

He further states that:

> A fluted point recovered by Thompson from Folsum Point Syncline (Site 13), about 25 miles northeast of the 1966 find (Thompson 1948) and two fluted points discovered by Lachenbruch and Hackman in 1950, on the headwaters of the Kugururok River, about 40 miles to the south (Solecki 1951), are quite similar to the point found on Site 1 in 1966 …

Regarding the Lachenbruch and Hackman points, Solecki (1951) writes:

> The larger of the two fluted points is recognized by Roberts as being typologically admissible as a Folsum point. This point (Fig. 35, c), damaged at the tip, originally measured about 4.2 cm long. It is 2.1 cm wide at the maximum width. One side has a single channel. The opposite side is double channeled. These channels measure 2.5 cm long and 0.8 cm wide. Inspection shows that they were struck from the base. Secondary chipping at the base produced the concavity. Further inspection shows that parallel flakes had been removed at right angles to the axis of the flint before the channels had been struck off … The opposing basal sides have been rubbed. The concave base also had been dulled.

Solecki writes further of the second fluted point:

> …Measuring 2.6 cm long, its original length may have been about 4 cm. The base is 2.3 cm wide. One face bears three channels, while the other side has two. These channels, situated side by side were struck from the base. The long-est channels measure 1.8 cm long and 0.8 cm wide on both respective faces. The base is shallowly concave. The latter and the opposing basal sides have been rubbed.

These points, which I will refer to as Utukok Points, are notable for being remarkably similar in appearance, size, and method of manufacture. Solecki and Humphrey identified the following traits as typical of the Utukok Point: concave base, 2–2.5 cm width, grinding or polishing of the basal margins, single or multiple channels on each surface, basal thinning, and parallel flaking at a right angle to the long axis of the point prior to removal of the channel flake. To these I would add that the typical Utukok Point exhibits a slightly asymmetrical concave base with one tang or ear slightly longer than the other.

Utukok points appear to be a manifestation of the unforested regions of the eastern Beringian Arctic, although examples are known from treed environments in the south-central Brooks Range. While I cannot address presence or absence of edge grinding in all cases, information in the literature suggests that these points are currently found distributed from the Seward Peninsula (Largent 2009) to the Noatak and Utukok River drainages (Humphrey 1966, Rasic and Gal 2000, Thompson 1948), Teshekpuk Lake (Davis et al. 1981), and Old Crow (Morlan and Cinq-Mars 1982). These points are distinguished from a number of undeniably fluted specimens from interior Alaska, most notably those from the vicinity of Batza Tena (Clark and Clark 1993), which are typically much more varied in morphology and manufacture. The above criteria would seem to exclude the unusual find at Iyatayet (Giddings 1951) as well as at least two of the Girls' Hill points.

Dating the Fluted Point

Unit 7 is located 1–2 m northeast of the TU10/13 date column. Three bone samples were submitted from TU7 in an attempt to date the fluted point base as tightly as possible. The first sample, a portion of a 13.3-g bone fragment, provided a date of 10 120±70 ^{14}C yrs BP. This sample was collected from the same quadrant as the fluted point base but from the excavation level immediately above. A second sample, gained from a 98.2-g bone fragment recovered from the same stratigraphic level as the fluted point (L7) but in an adjacent quadrant (D), returned a date of 9870±70 ^{14}C yrs BP. A third sample, gained from a 21.7-g bone fragment also from quadrant D but from L8, returned a date of 10 720±50 ^{14}C yrs BP. These dates strongly suggest a date in excess of 10 120±70 ^{14}C yrs BP, but probably less than 10 720±50 ^{14}C yrs BP, for the fluted point base.

Discussion

The Raven Bluff site (DEL-402) is a site of regional significance likely to make a substantial contribution to our understanding of the prehistory of the Alaskan Arctic. This site is distinguished from the growing number of sites known from interior northwest Alaska in several important ways. Perhaps most importantly, DEL-402 is a stratified site with a thick Late Pleistocene/Early Holocene deposit underlying Northern Archaic and Eskimo Continuum deposits. Secondly, the site contains relatively abundant dateable material in the form of a well-preserved faunal assemblage, enhancing the site's significance exponentially. This combination of factors may provide for the dating of artifacts and assemblages from multiple time periods at the site, and by association, throughout Alaska. Additionally, the faunal assemblage offers a unique opportunity to address subsistence strategies and general questions of game distribution and abundance through time in this region. Lastly, and of particular significance, we can now rather

accurately date a northern fluted point occurrence for the first time since the initial discovery of this artifact type in Alaska over 60 years ago. Additional testing at Raven Bluff appears to offer a tantalizing possibility: that of defining the components of a Late Pleistocene fluted point assemblage and dramatically increasing the data potential of numerous fluted point finds throughout the North American western Arctic and Subarctic.

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